



Armed Forces College of Medicine

AFCM



Posterior Abdominal Wall

Aorta

IVC

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INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

- Describe the arrangement, **nerve supply and actions of posterior abdominal wall muscles**
- Describe the formation & **branches of the lumbar plexus**
- **Describe abdominal aorta** : origin , termination, branches and important relations.
- **Describe Inferior vena cava** : origin , termination, tributaries and important relations

Key points



- Posterior abdominal wall muscles & Lumbar plexus
- Abdominal aorta
- IVC

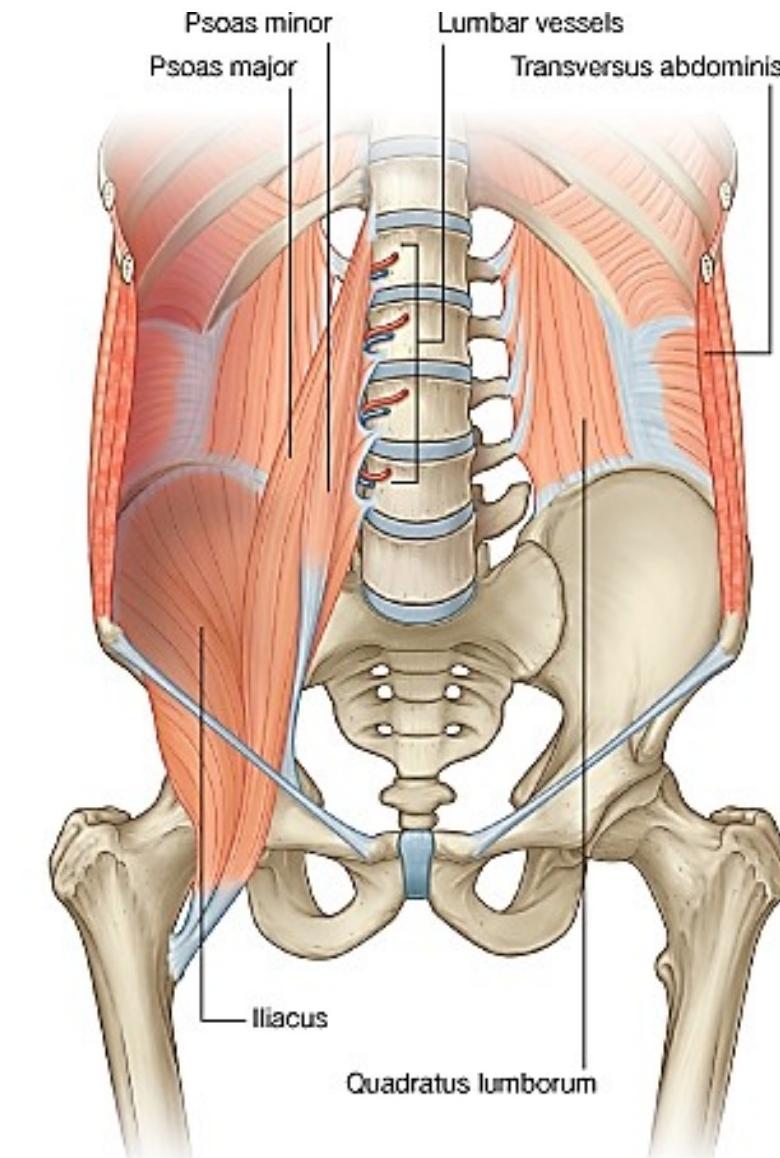
Posterior Abdominal Wall

Muscles:

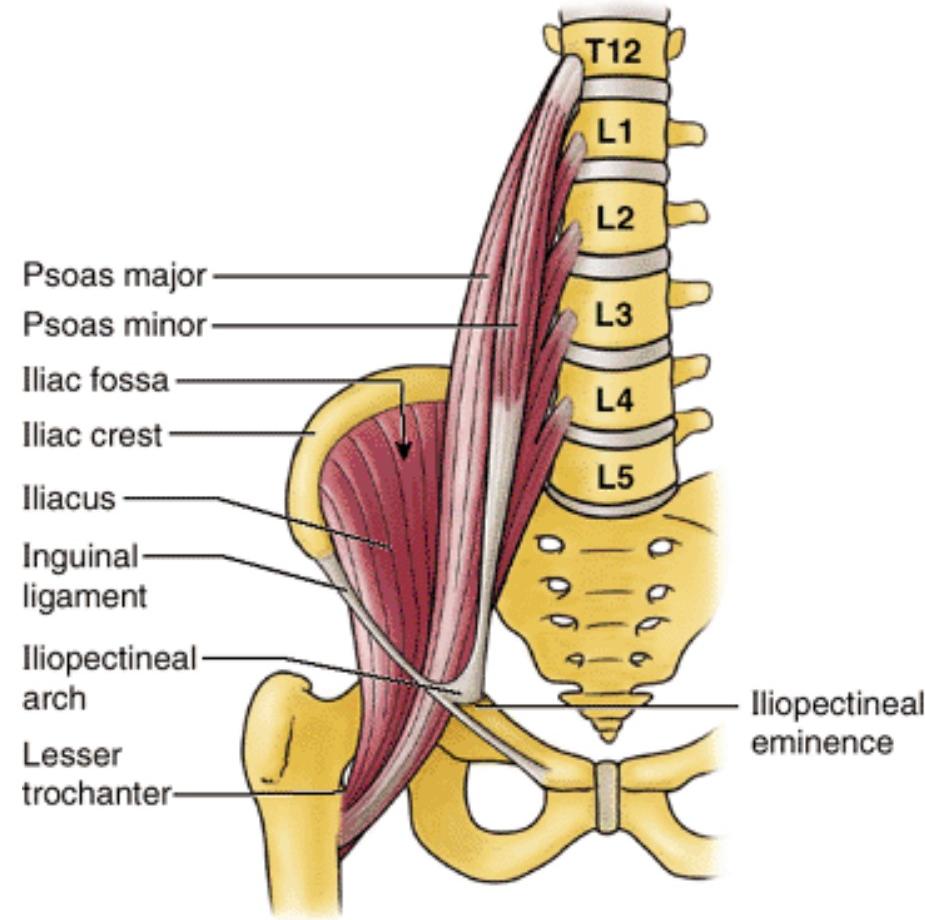
Psoas Major & Minor

Quadratus Lumborum

Iliacus



Psoas Major Muscle



Anterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Origin

- Sides of bodies
 - Transverse processes
 - The intervertebral discs
- Of T12, L1 to L5**

Insertion

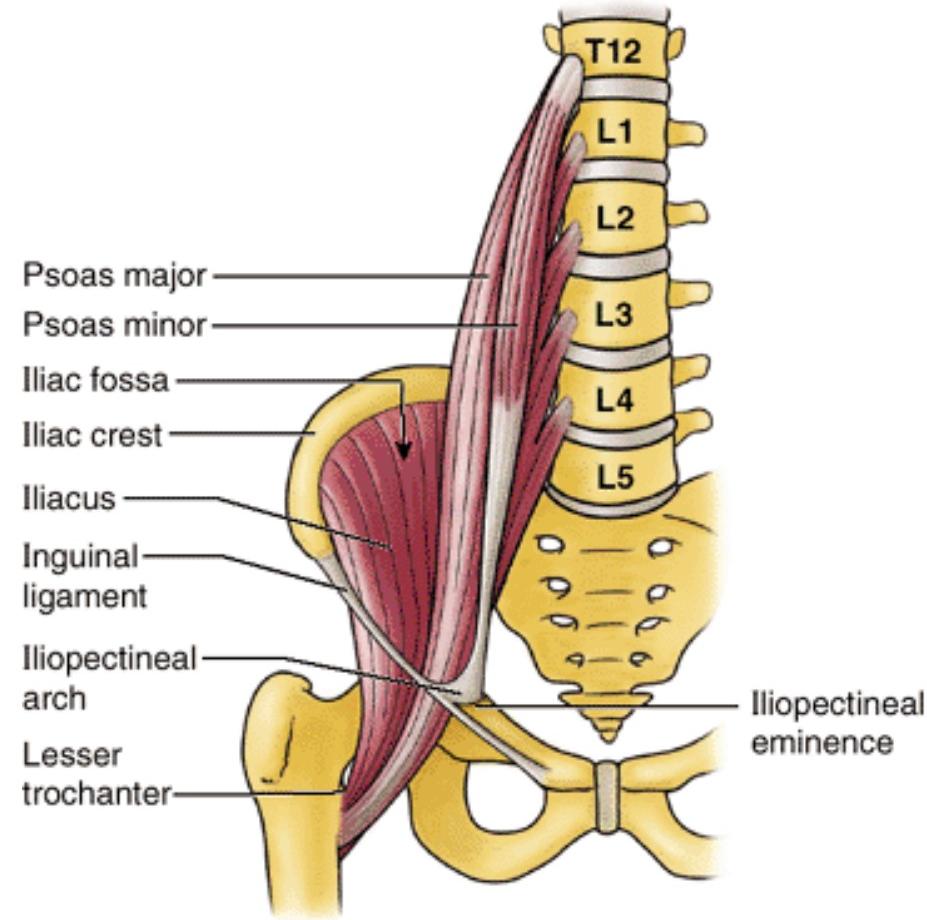
- iiliacus into lesser trochanter of femur

Nerve Supply: Posterior rami of L2,3,4

Action:

**Flexion of thigh on the trunk
Or flexion of trunk on thigh as
Sitting up from lying position**

Iliacus Muscle



Origin

- iliac fossa

Insertion

With psoas major into lesser trochanter of femur

Nerve Supply

Femoral nerve

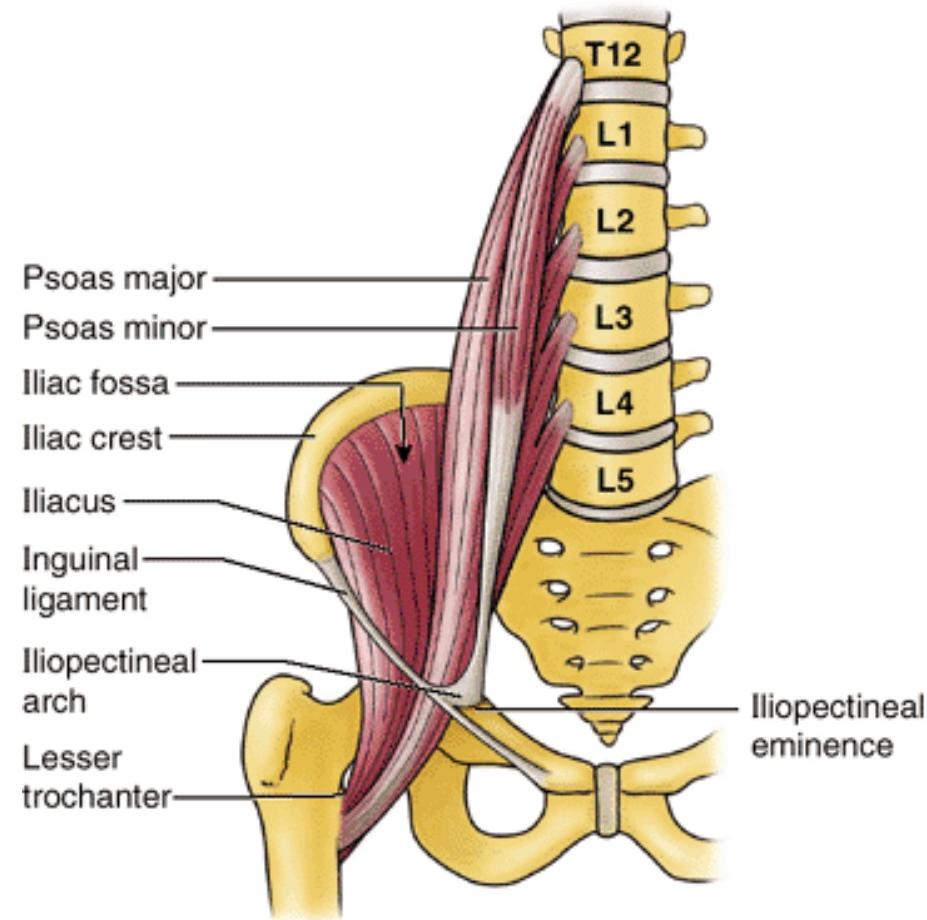
Action

Flexion of thigh on the trunk
Or flexion of trunk on thigh as
Sitting up from lying position

Anterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Psoas Minor Muscle



Anterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Origin

Sides of bodies of T12 and L1
vertebrae and intervening
intervertebral disc

Insertion

iliopectineal eminence
Nerve Supply:

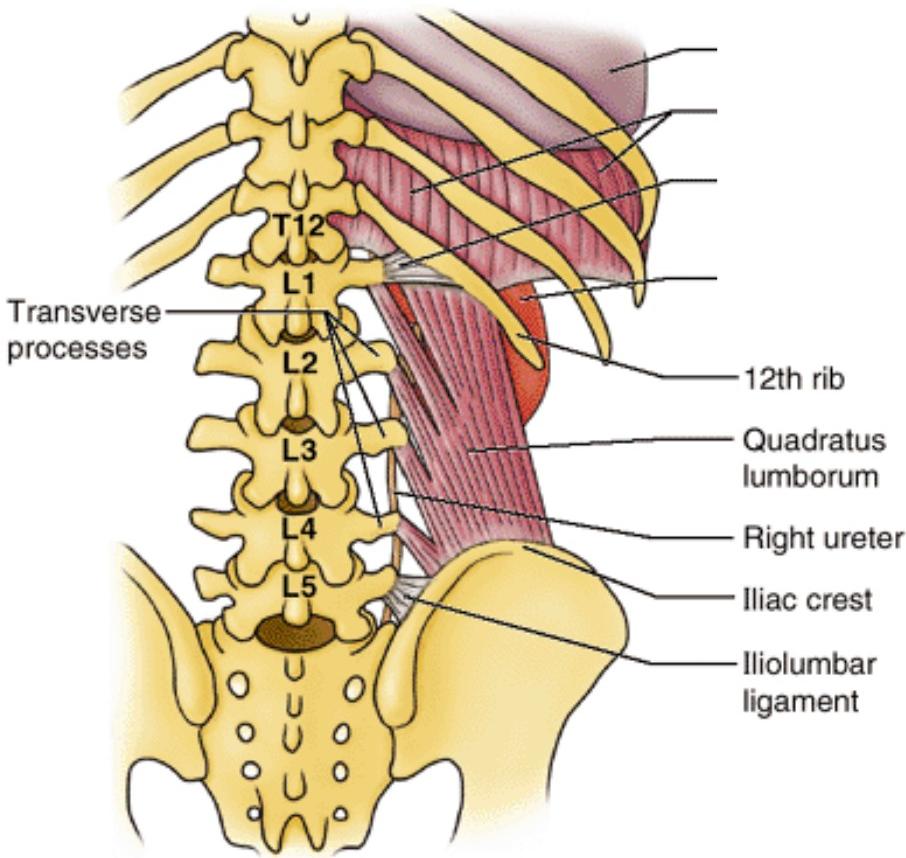
Anterior rami of L1

Action:

Flexion of trunk

Re: Psoas minor may be absent

Quadratus Lumborum Muscle



Posterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Origin

- iliolumbar ligament,
- iliac crest

Insertion

- Tip of transverse processes of L1 to L 4

- inferior border of rib 12

Nerve Supply

Posterior rami of T12 and L1 to L4

Action

Depress and stabilize rib XII and some lateral flexion of trunk

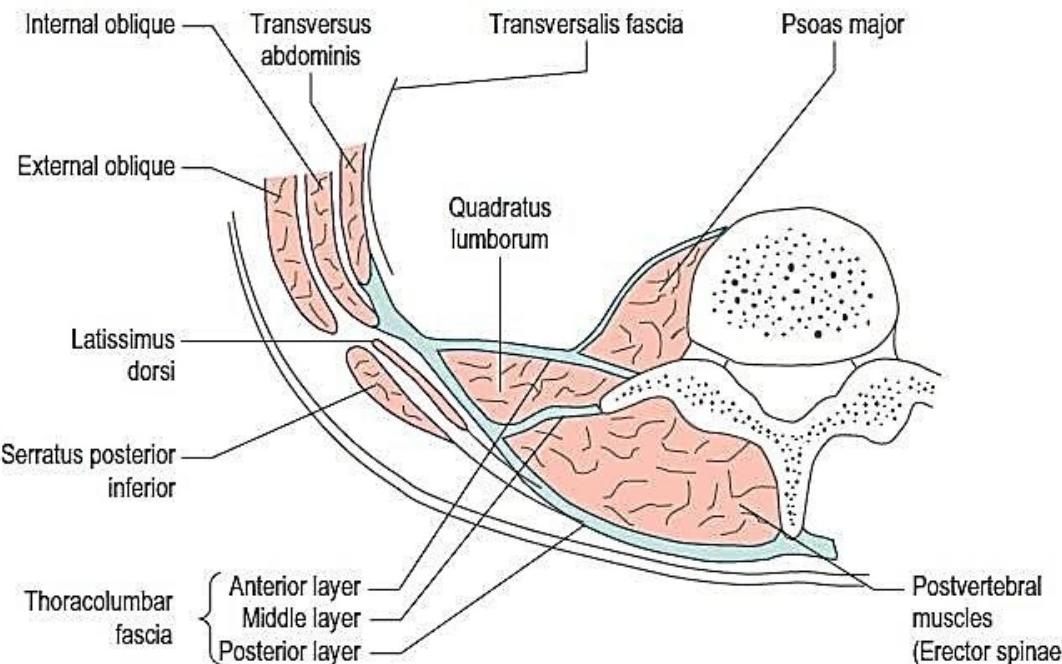
fascia on the posterior abdominal wall

- Psoas fascia
- Fascia iliaca
- Thoracolumbar fascia

- This fascia covers the deep muscles of the back and the trunk.
- In the lumbar region, it is **very thick** **well-defined** into 3 layers:

1. The posterior layer:

Passes **behind** the erector spinae muscle and is attached to the **spines** of the lumbar and sacral vertebrae .



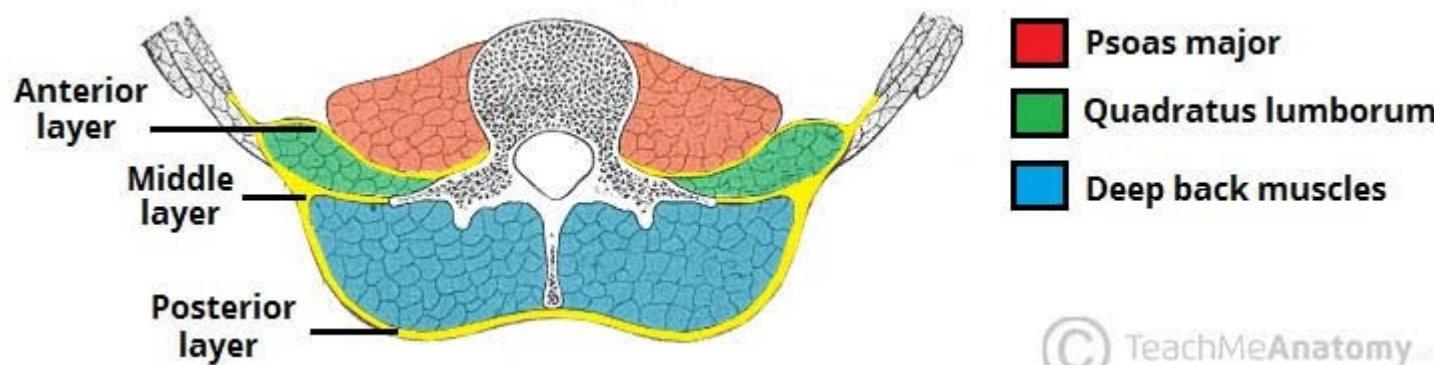
fascia on the posterior abdominal wall

2. Middle layer:

covers the **back** of the **quadratus lumborum** m. & attached to the **tips** of the transverse processes of the lumbar vertebrae.

3. The anterior layer:

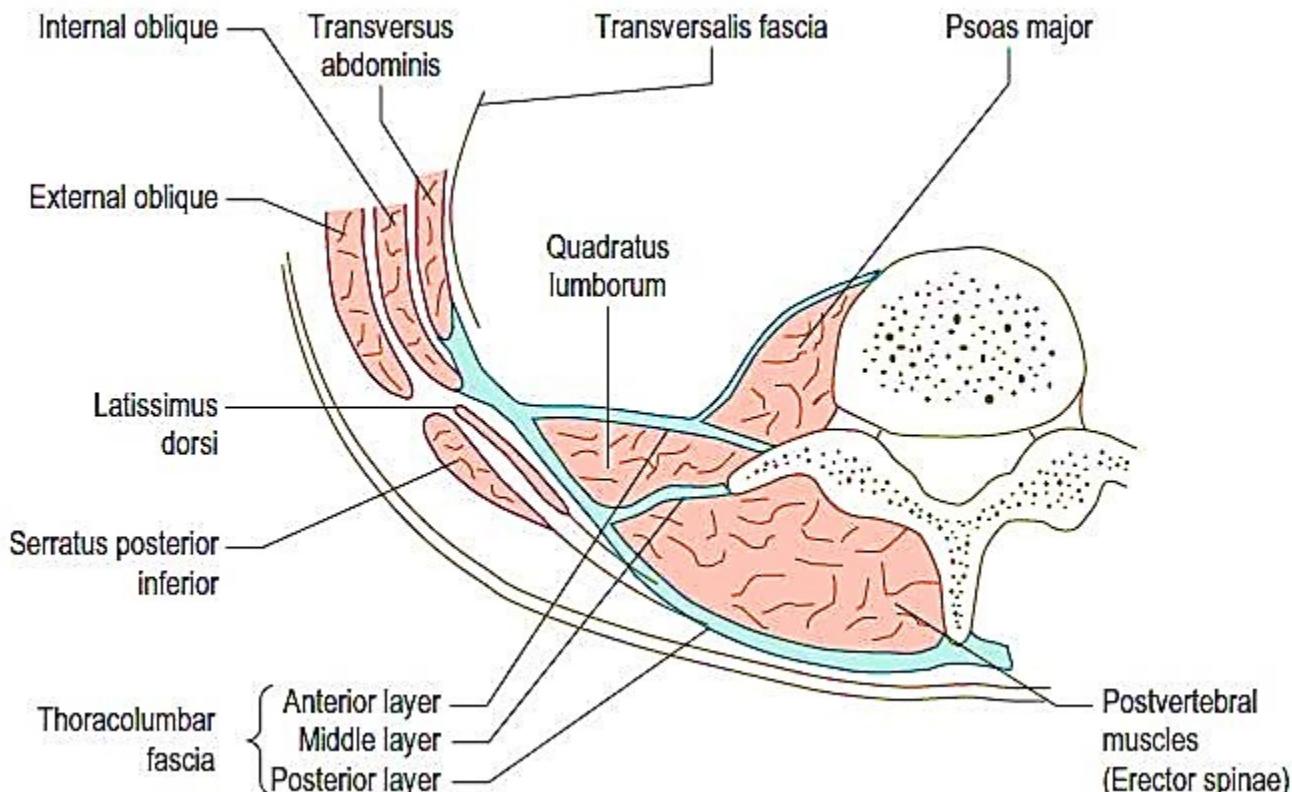
In front of the **quadratus lumborum** and is attached medially to **anterior surfaces** of the transverse processes of the lumbar vertebrae



TeachMeAnatomy

Fascia on the posterior abdominal wall

- Laterally, the three layers form the aponeurotic origin of transversus abdominis and internal oblique.



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LUMBAR PLEXUS

TWIG

T12

L1

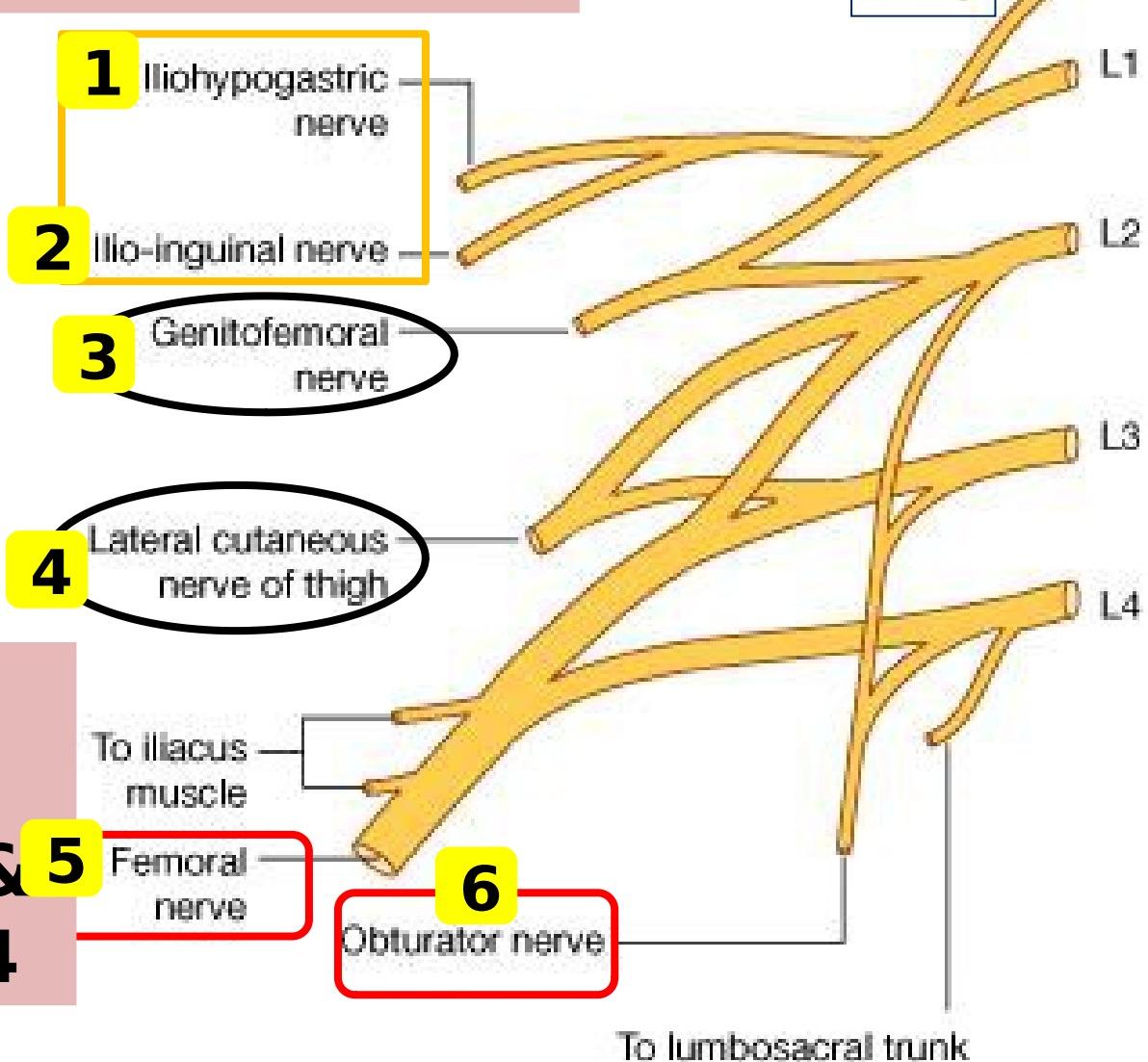
L2

L3

L4

Formation:
**WITHIN THE
SUBSTANCE
OF PSOAS
MAJOR
MUSCLE**

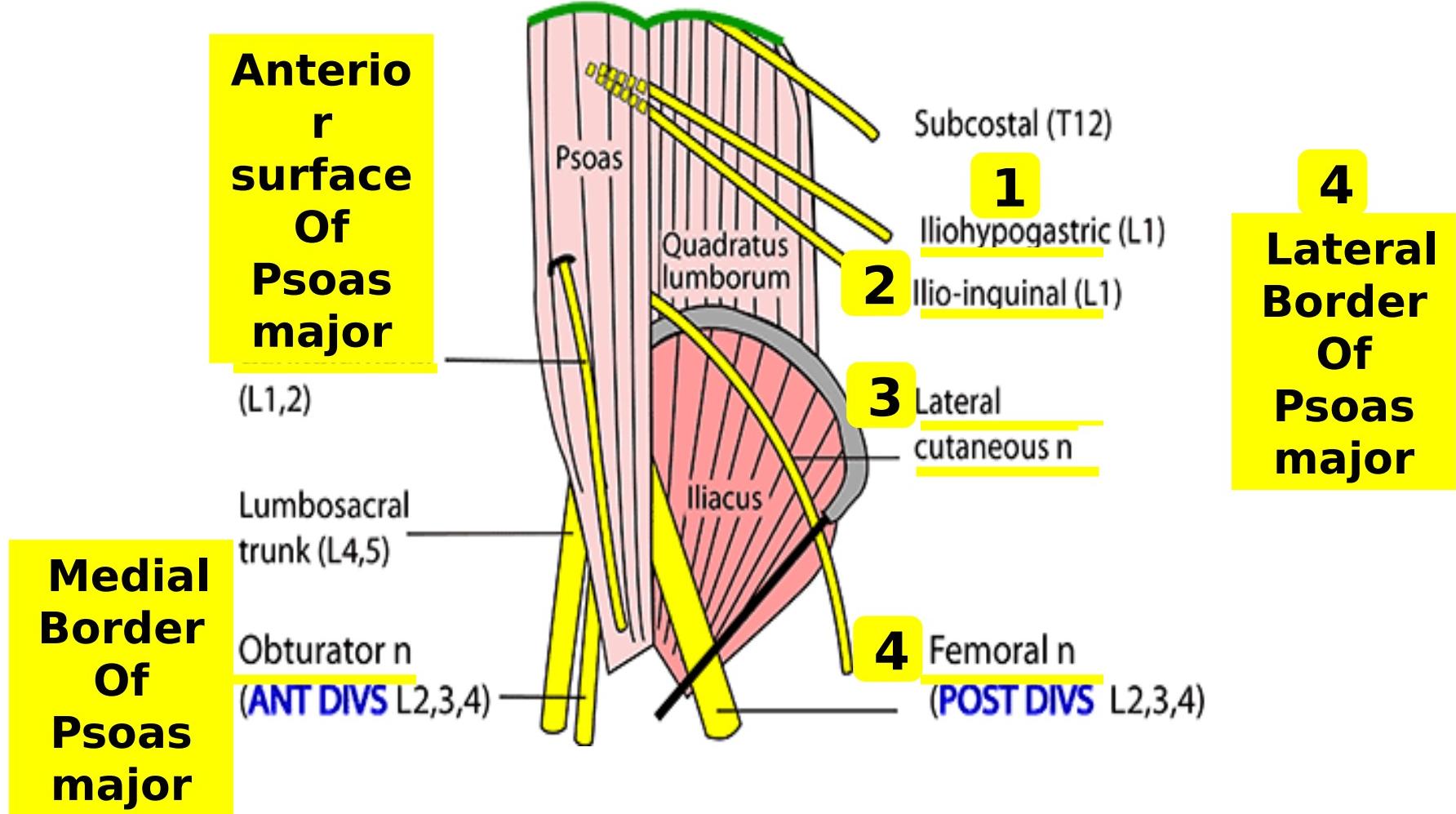
From ventral
rami of upper 3
lumbar nerves &
upper part of L4



Branches
(6)

New Five Year Program

Arrangement of the lumbar plexus branches



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Quiz 1 (Posterior abdominal wall & lumbar Plx.)



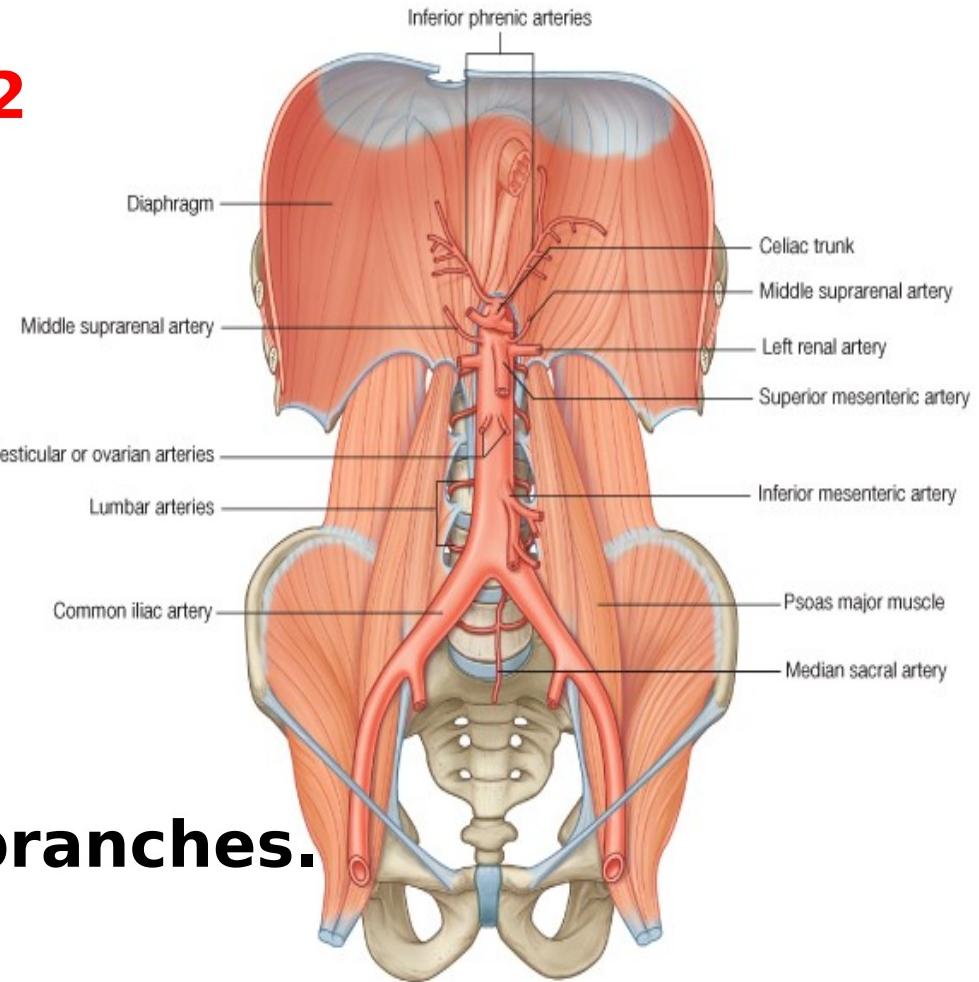
One of the following nerves is related to medial border of psoas major:

- a. Ilioinguinal**
- b. Iliohypogastric**
- c. Obturator**
- d. Lateral cutaneous nerve of thigh**
- e. Femoral**

Abdominal Aorta

beginning:
in the median plane at **T12**
at aortic opening of
diaphragm

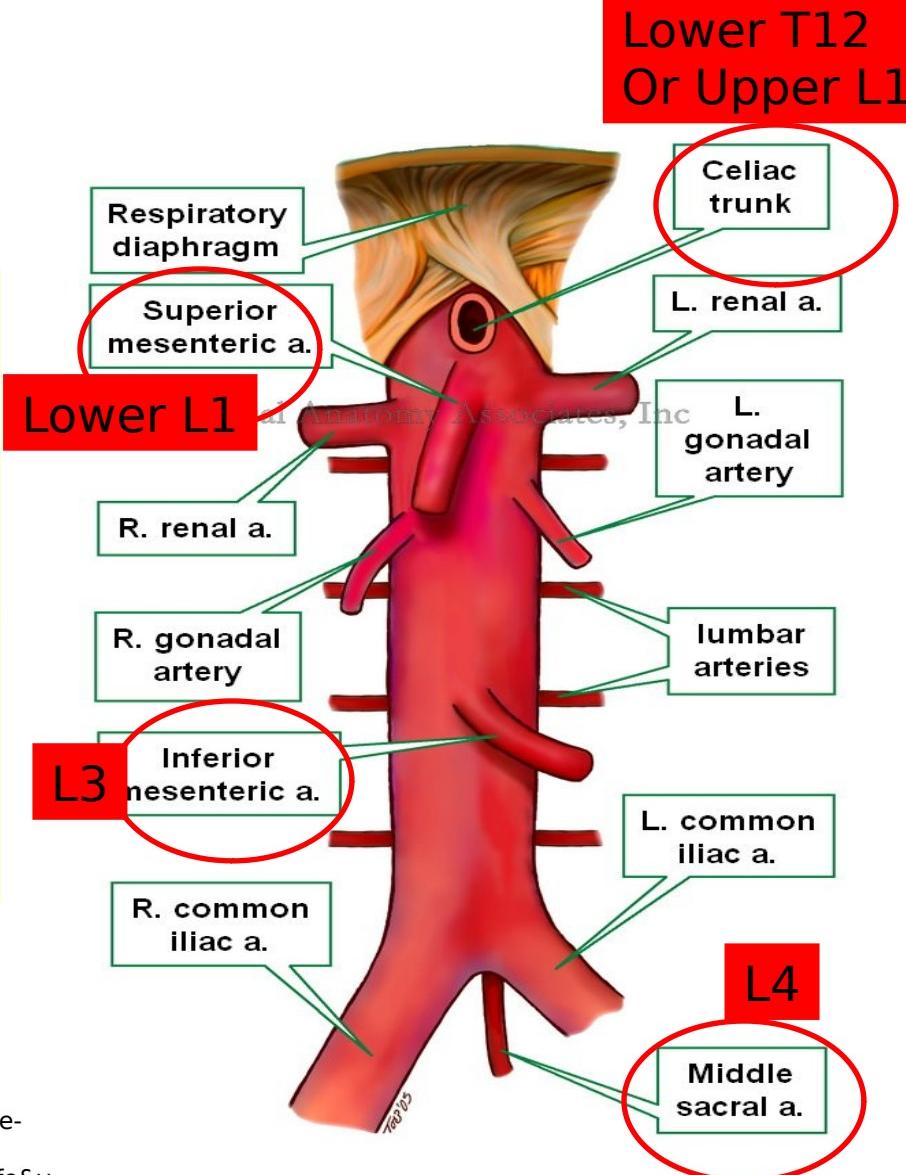
- It descend in front of vertebral bodies with slight inclination to the left.
- Termination:
Inclination to the left.
the lower border of **L4**.
Here it gives 2 terminal branches.
Common Iliac Arteries)



BRANCHES OF ABDOMINAL AORTA

Single Branches

The single branches arise from the front of the abdominal aorta EXCEPT the median sacral artery which arises from the back of the aorta just above its bifurcation.

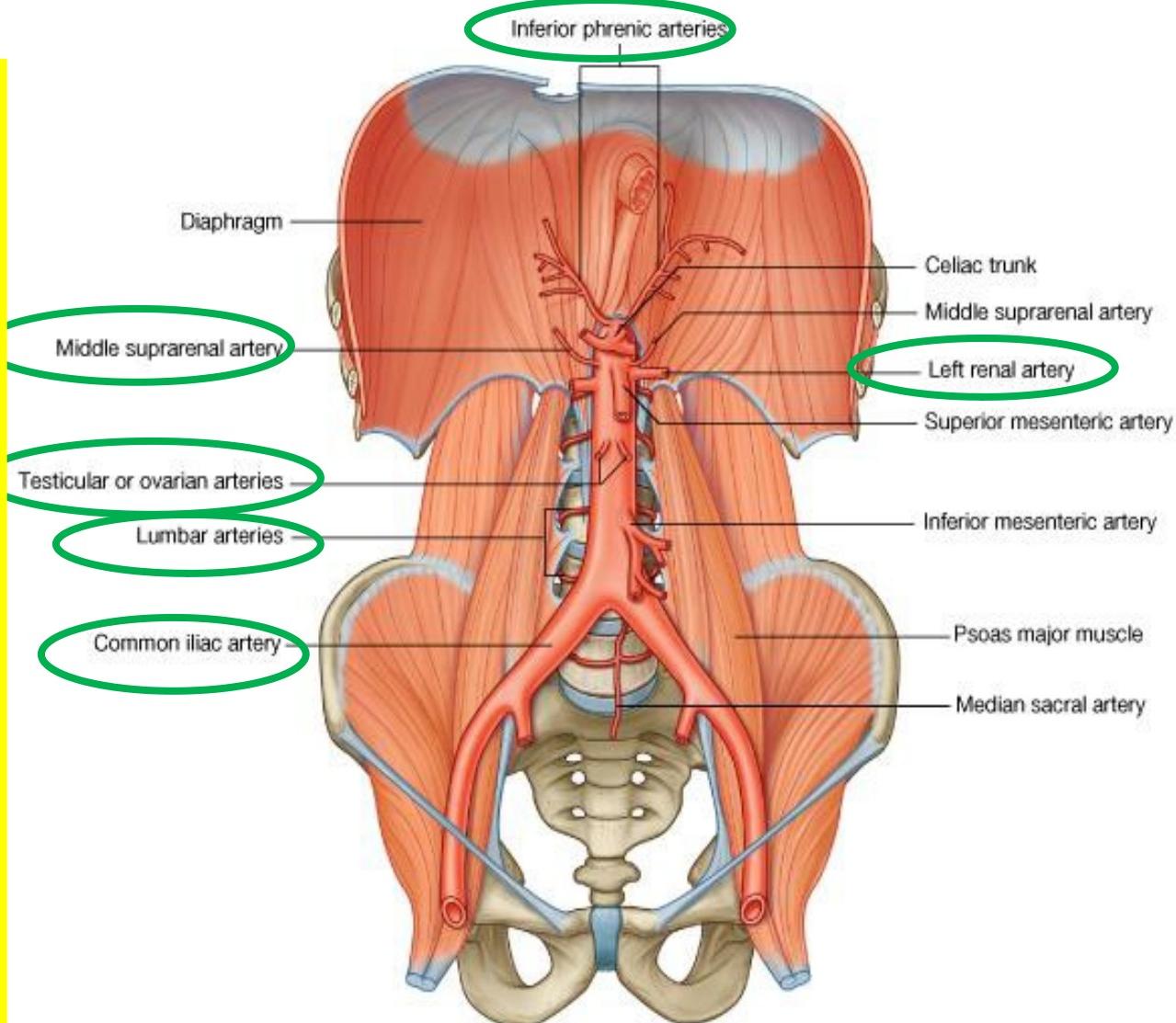


Paired Branches

The inferior phrenic Gonadal arteries from the front

Middle suprarenal Renal arteries (L2) from the sides

Lumbar arteries from the back

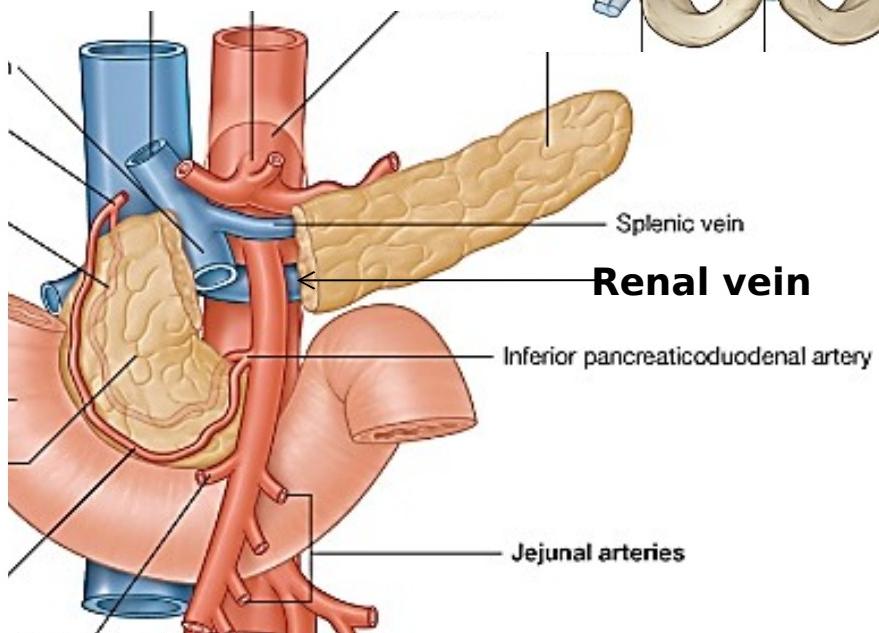
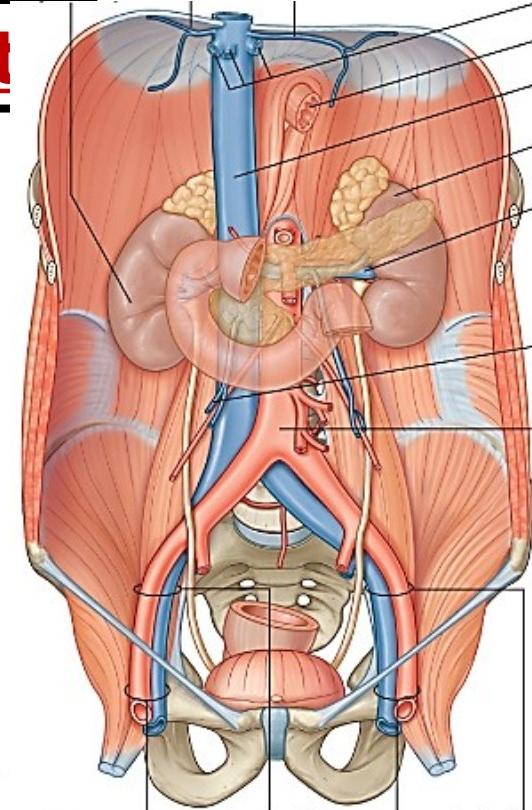


Important relations of abdominal aort

Anteriorly:

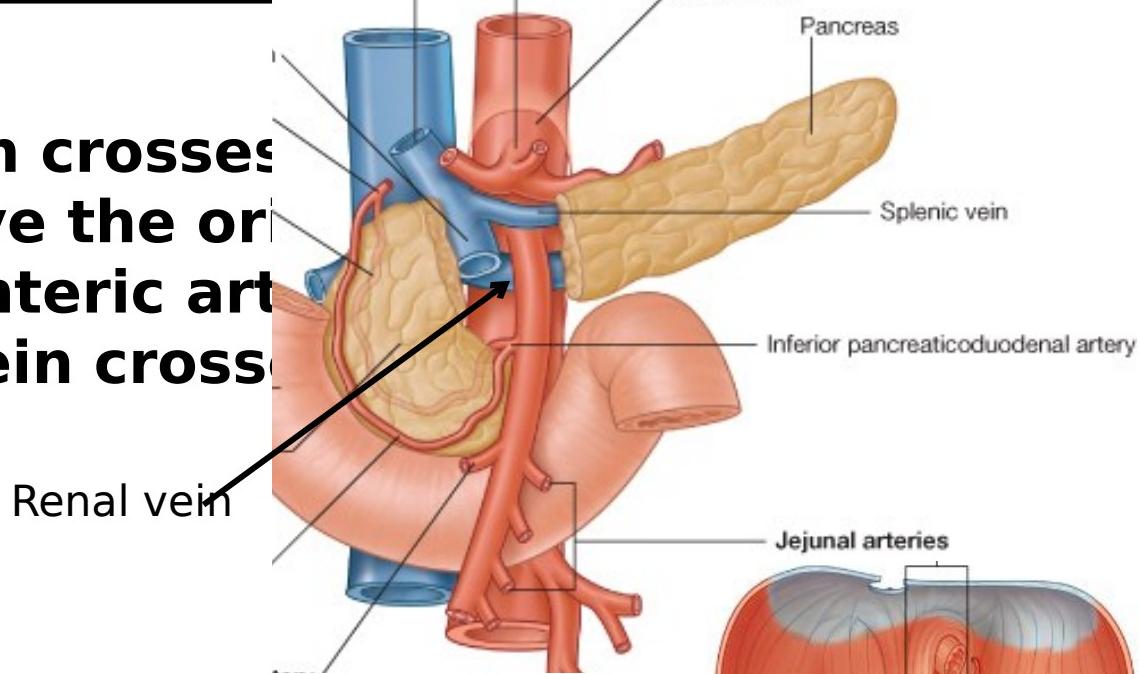
from above downwards:

1. Coeliac trunk
2. Body & uncinate process of pancreas.
3. Splenic & left renal vein.
5. 3rd part of duodenum.
6. Root of mesentery & Superior mesenteric vessels & coils of SI.



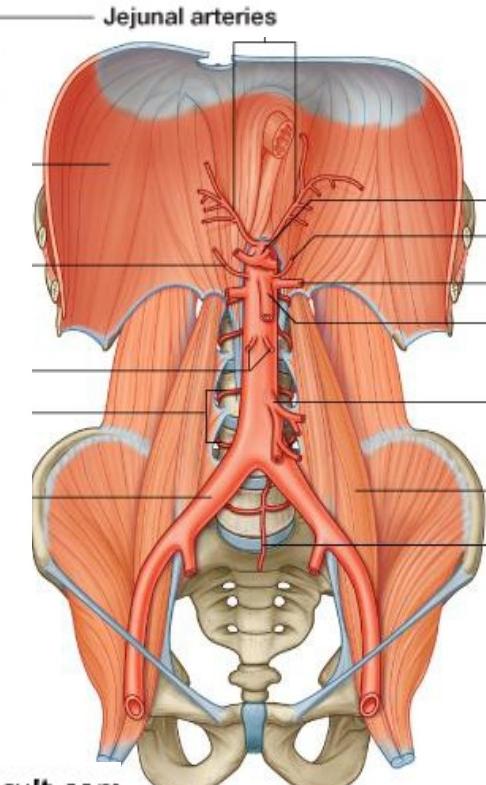
Important relations of abdominal aorta

Note: The splenic vein crosses the abdominal aorta above the origin of the superior mesenteric artery while the left renal vein crosses below it.



Posteriorly:

bodies of the upper four lumbar vertebrae.



Quiz 2 (abdominal aorta)



A single branch of abdominal aorta is:

- a. Suprarenal**
- b. Median sacral**
- c. Renal**
- d. Gonadal**
- e. Inferior phrenic**

Quiz 2 (abdominal aorta)



Which of the following are the correct vertebral levels for the celiac trunk, superior mesenteric, and inferior mesenteric arteries, respectively?

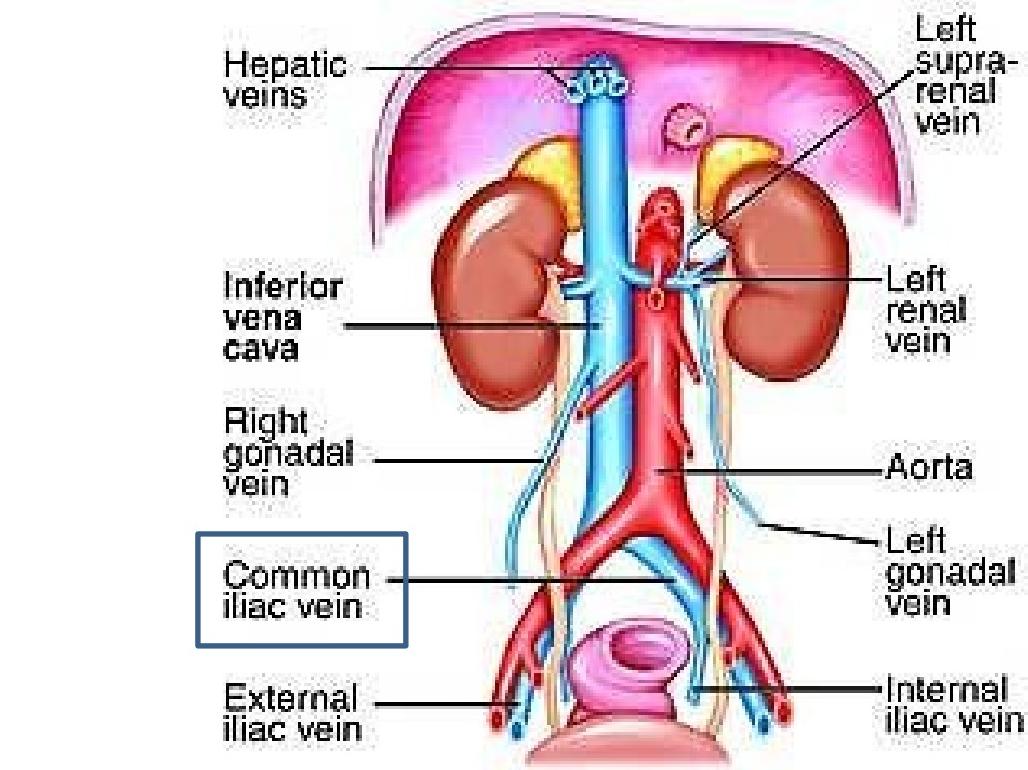
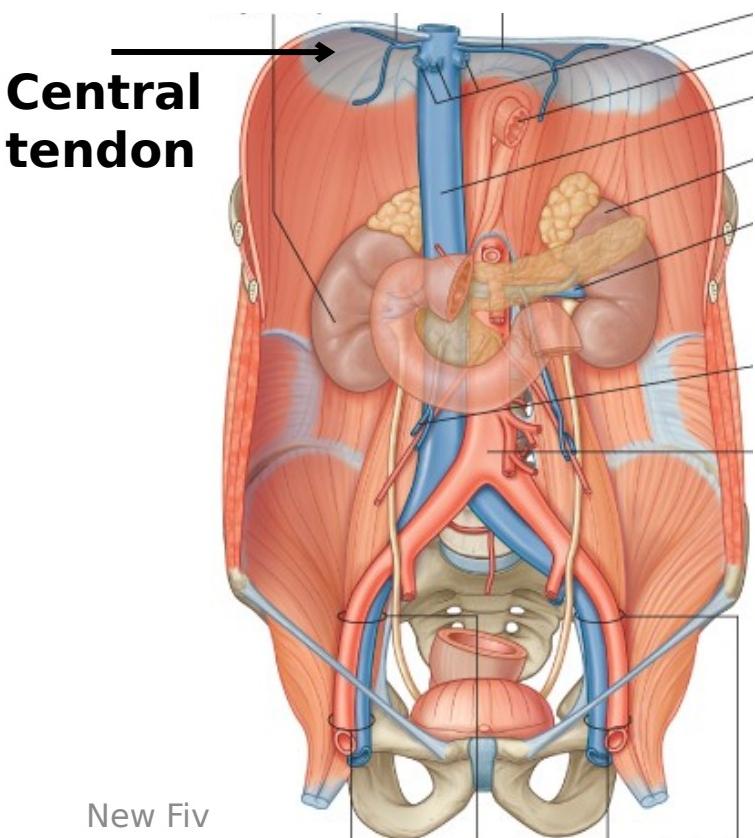
- a. T8, T9, T11
- b. T9, T10, T12
- c. T10, T11, L1
- d. T11, T12, L2
- e. T12, L1, L3



IVC

Beginning:

**L5
FROM
2 COMMON ILIAC veins**



End:

It pierce the CENTRAL TENDON at T8 to end in the right atrium

Tributaries

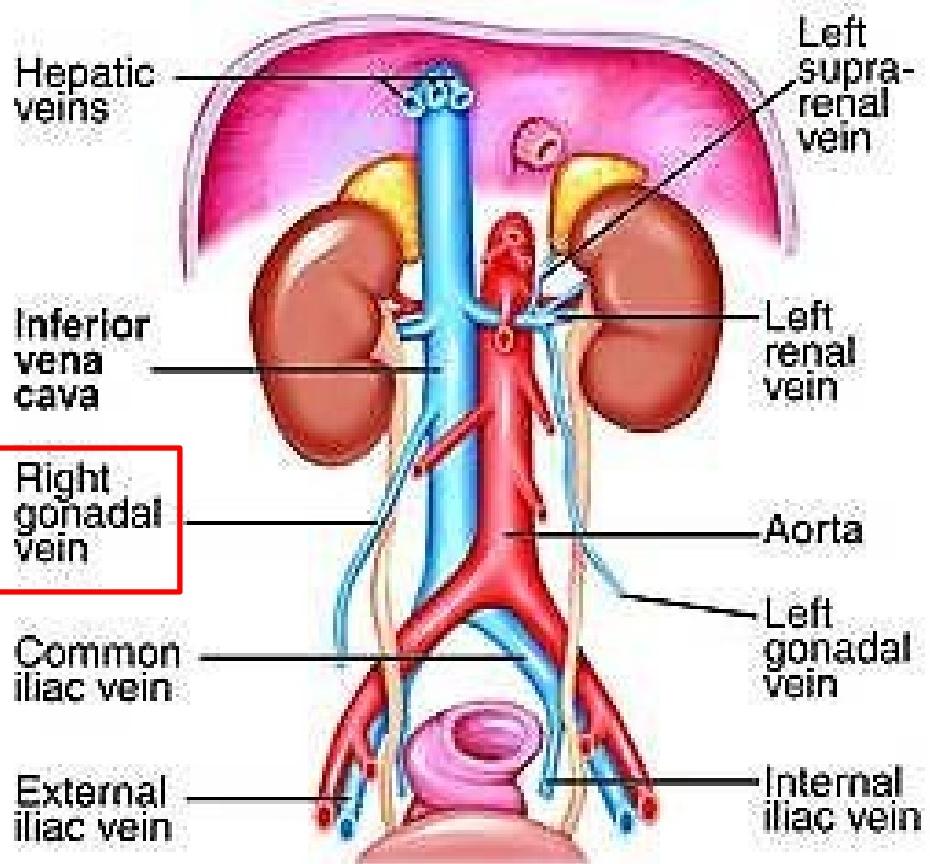
Common iliac veins
Lumbar veins

Right gonadal vein

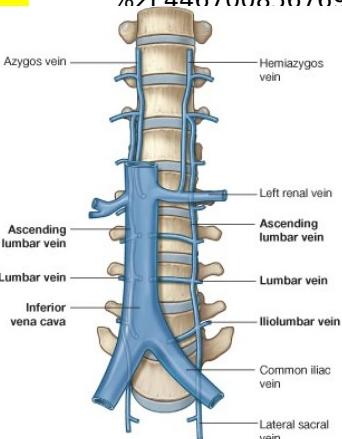
Right suprarenal vein
Renal veins

Inferior phrenic veins
Hepatic veins

**As Paired branch
Of aorta
+ Hepatic**



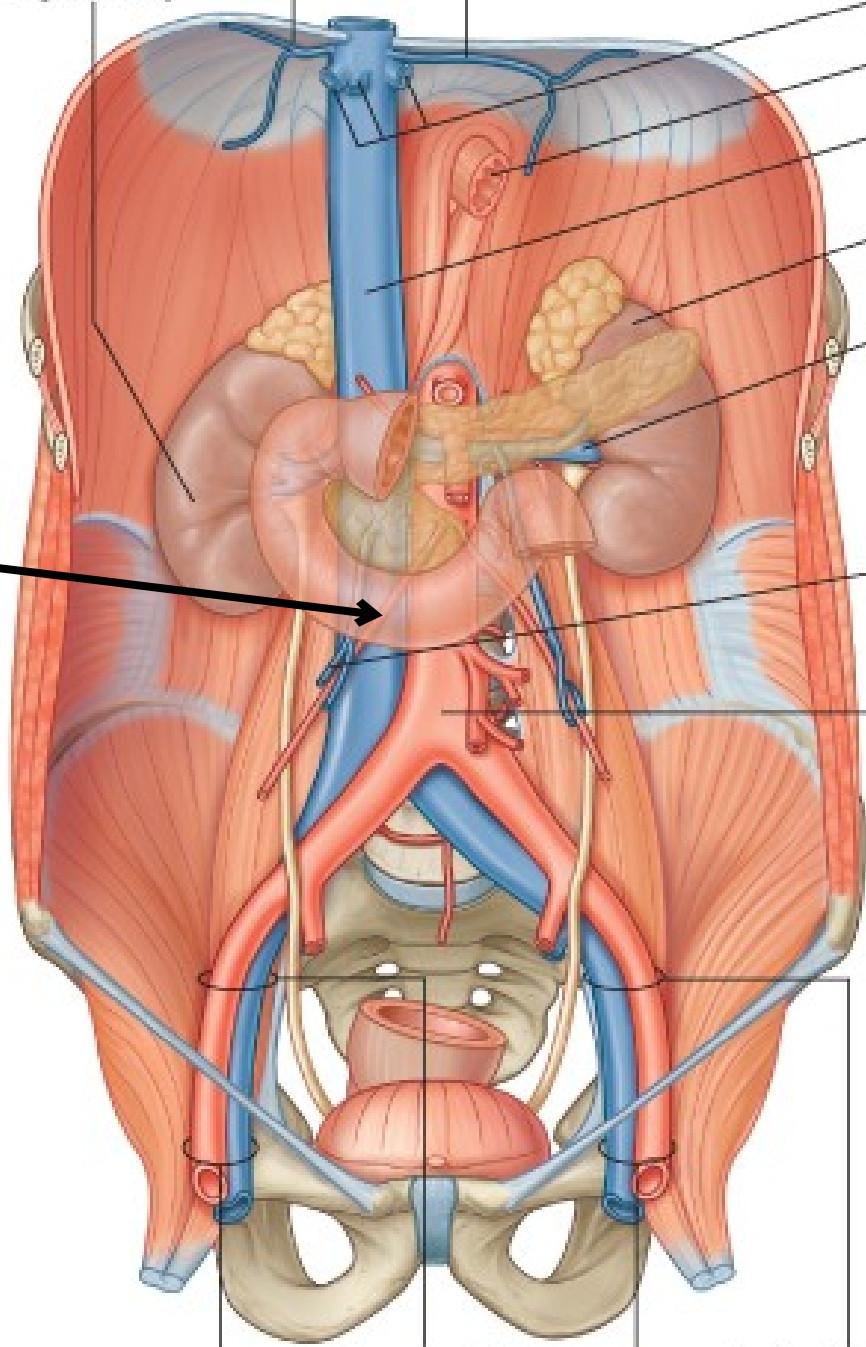
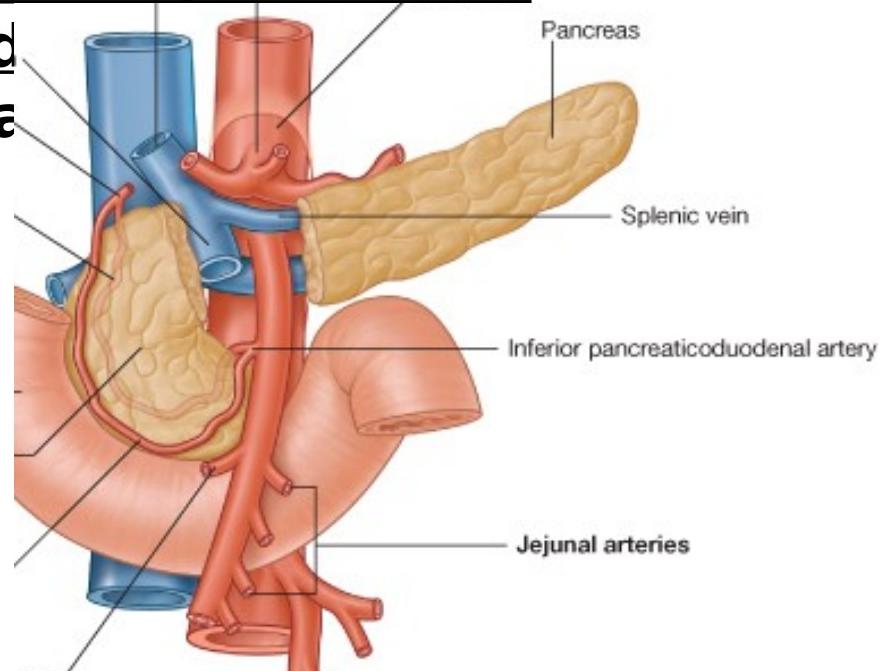
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Important relations of IVC

Anteriorly (from below upwards):

1. Right common iliac artery at its beginning.
2. Root of mesentery with the superior mesenteric vessels.
3. Third part of the hepatic veins.

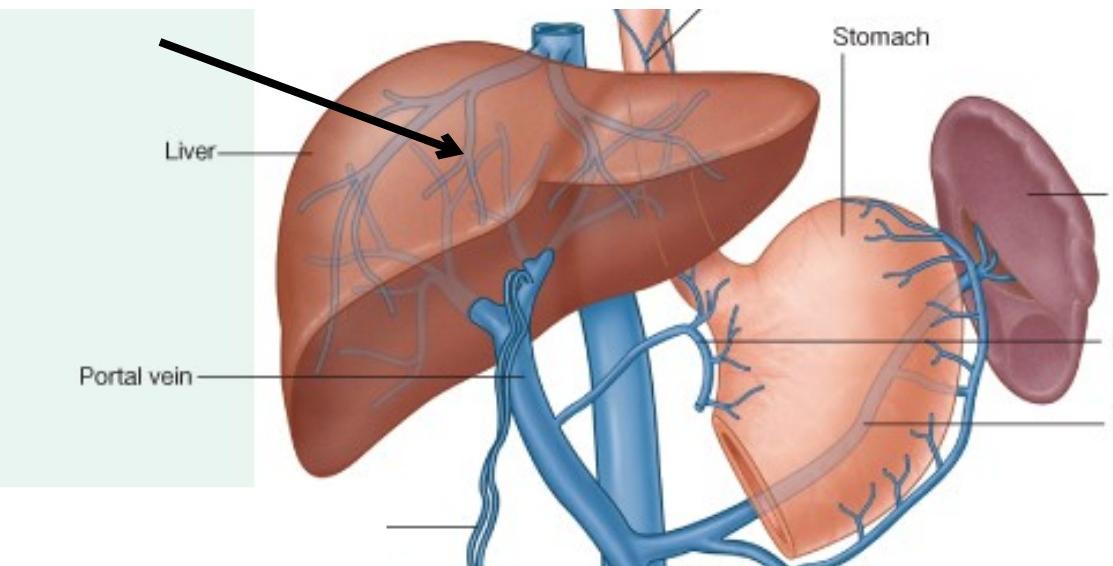


Important relations of IVC

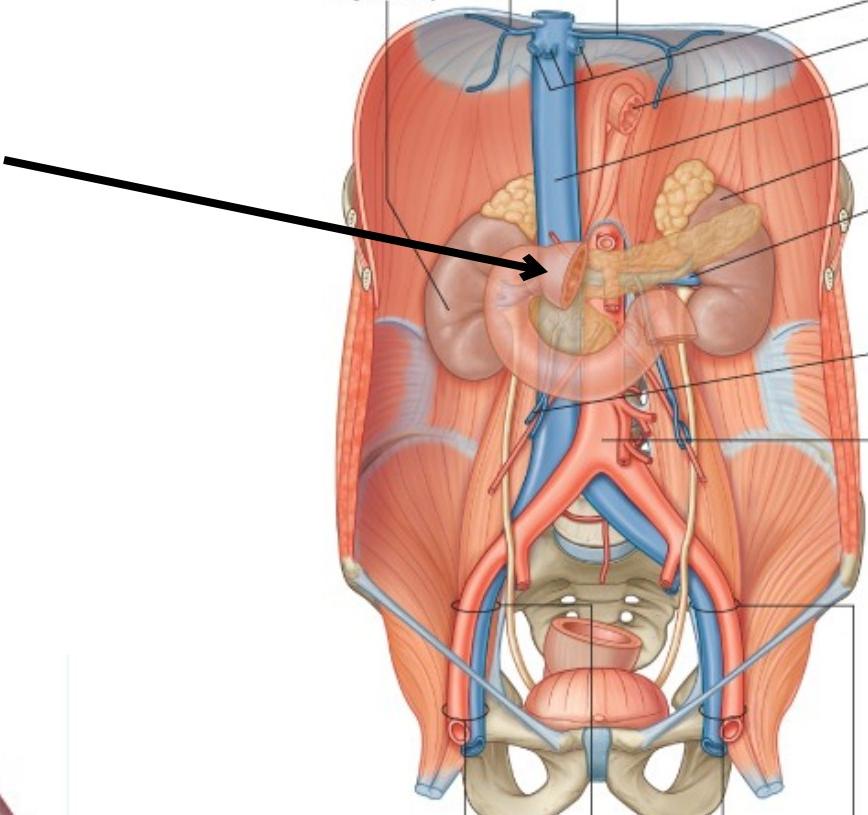
Anteriorly (from below upwards):

4. First part of the duodenum

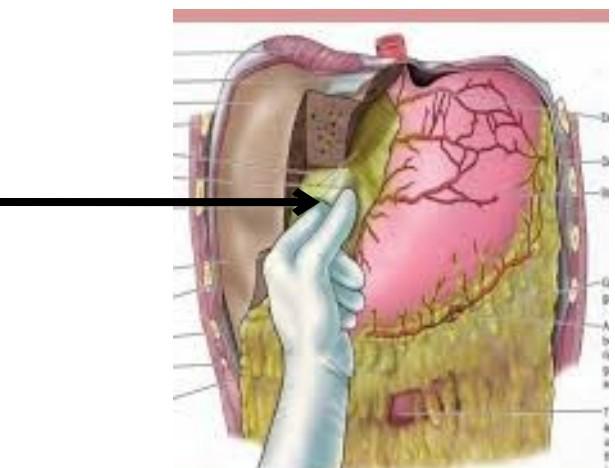
5. Opening into the lesser sac



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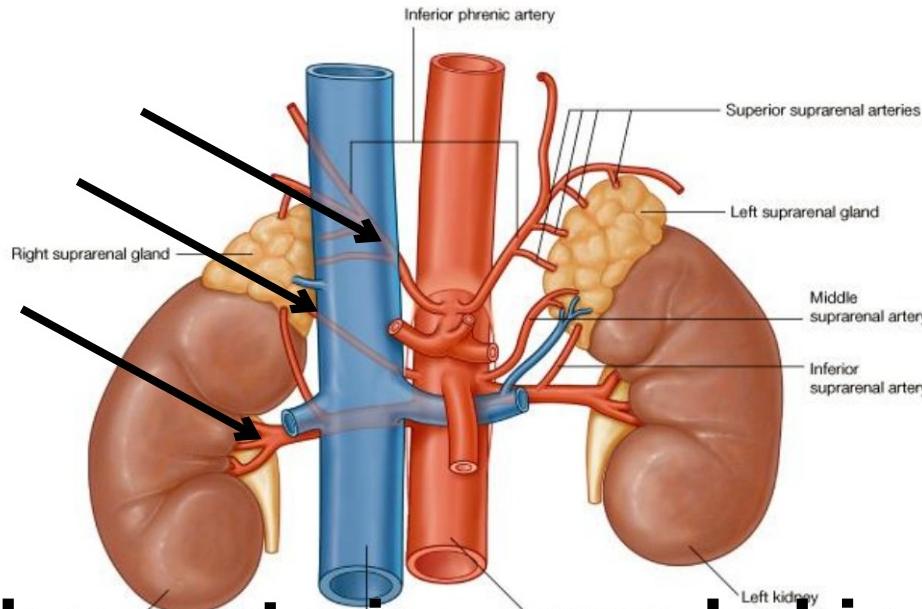


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Important relations of IVC

Posteriorly :



Three arteries cross behind I.V.C

- 1. Right renal artery.**
- 2. Right middle suprarenal artery.**
- 3. Right inferior phrenic artery.**

Quiz 3 (IVC)



One of the following veins is not a tributary of IVC:

- a. Left Hepatic**
- b. Right Hepatic**
- c. Left supra renal**
- d. Right supra renal**
- e. Right renal**

Summary



- Posterior abdominal wall muscles & Lumbar plexus
- Abdominal aorta
- IVC

SUGGESTED TEXTBOOKS



1. Clinical Anatomy by regions, Richard Snell, 9th. Edition pages 134-137 .
2. Atlas of human anatomy, Frank Netter, 4th. Edition plates 263- 265.

GOOD LUCK